AMENDMENTS TO THE SPECIFICATION

IN THE SPECIFICATION:

The paragraph beginning on page 11, line 2, has been amended as follows:

~~An object~~A feature of the present invention is to provide a pattern formation apparatus and a manufacturing method thereof that can form patterns with high accuracy.

The paragraph beginning on page 11, line 5, has been amended as follows:

In order to achieve the ~~object~~feature, a pattern formation apparatus of the present invention comprises: a substrate including a concave section; a top plate that is combined with a surface of the substrate where the concave section is provided; a combining layer, provided on at least one of the substrate and the top plate, via which the substrate and the top plate are combined with each other, and nozzles formed by melting the combining layer such that the substrate and the top plate are combined with each other, the nozzles jetting out ink such that a pattern is formed.

The paragraph beginning on page 13, line 13, has been amended as follows:

In order to achieve the ~~object~~feature, a method of the present invention for manufacturing a pattern formation apparatus comprises the steps of: (i) combining a surface of a substrate where a concave section is provided with a top plate such that nozzles for jetting out ink are formed; and (ii) melting a combining layer, provided on at least one of the substrate and the top plate, such that the substrate and the top plate are combined with each other via the molten combining layer.

The paragraph beginning on page 15, line 14, has been amended as follows:

Fig. 1 is a perspective view showing a pattern formation apparatus of an embodiment in accordance with the present invention;[[.]]

The paragraph beginning on page 15, line 17, has been amended as follows:

Fig. 2 is a perspective view showing another pattern formation apparatus of an embodiment in accordance with the present invention;[[.]]

The paragraph beginning on page 15, line 20, has been amended as follows:

Fig. 3(a) through Fig. 3(c) are cross sectional views respectively showing manufacturing steps of a pattern formation

apparatus of an embodiment in accordance with the present invention;[[.]]

The paragraph beginning on page 15, line 24, has been amended as follows:

Fig. 4 is a perspective view showing a pattern formation apparatus of another embodiment in accordance with the present invention;[[.]]

The paragraph beginning on page 16, line 2, has been amended as follows:

Fig. 5(a) and Fig. 5(b) are perspective views respectively showing a pattern formation apparatus of a further embodiment in accordance with the present invention;[[.]]

The paragraph beginning on page 16, line 6, has been amended as follows:

Fig. 6(a) through Fig. 6(e) are cross sectional views respectively showing manufacturing steps of a pattern formation apparatus of still a further embodiment in accordance with the present invention;[[.]]

The paragraph beginning on page 16, line 10, has been amended as follows:

Fig. 7(a) through Fig. 7(c) are cross sectional views respectively showing manufacturing steps of a pattern formation apparatus of yet another embodiment in accordance with the present invention; [[.]]

The paragraph beginning on page 16, line 14, has been amended as follows:

Fig. 8(a) and Fig. 8(b) are cross sectional views respectively showing manufacturing steps of a pattern formation apparatus of yet a further embodiment in accordance with the present invention; [[.]]

The paragraph beginning on page 16, line 18, has been amended as follows:

Fig. 9(a) and Fig. 9(b) are cross sectional views respectively showing manufacturing steps of a pattern formation apparatus of yet a further embodiment in accordance with the present invention; and [[.]]

The paragraph beginning on page 22, line 18, has been amended as follows:

~~It is preferable that the~~The metal thin films via which the base substrate 1 and the top plate 2 ~~are~~ may be made of Au, respectively. However, the present invention is not limited to this. For example, one of the metal thin films may be made of other metal such as Al or Sn. In this case, note that higher heat

temperature is required for the combining than that of the combining of the Au thin films. Note also that the material of the base substrate 1 to be used should be heat-resistant, or such a jetting-out that does not burden the pattern formation apparatus during the jetting-out should be adopted, because the combining strength is slightly reduced. Especially, note that the ultrasonic wave should be applied together with the heat treatment during the combining in the case of using the Al thin film.

The paragraph beginning on page 40, line 7, has been amended as follows:

In the method for manufacturing the ink flow paths and the micro nozzles in accordance with the present embodiment, the combining of the top plate 82 with the base substrate 81 is carried out by the melting of the low-melting glass. This allows the top plate 82 to be combined with the base substrate 81 without deteriorating the shape accuracy of the nozzle opening sections 86. Note that ~~it is preferable that~~ the thickness of the top plate 82 is set as thin as possible in terms of heat loss during the melting, and ~~it is more preferable~~ that the top plate 82 has a thickness of not more than 100μm. Note also that it is necessary to select a jetting-out method that does not require great stiffness when reducing the thickness of the top plate 82. This is because it is likely that the stiffness is reduced when reducing the thickness of the top plate 82.

The paragraph beginning on page 40, line 23, has been amended as follows:

~~It is preferable that the~~The base substrate 81 ~~is~~ may be made of a material having a high heat resistance. ~~It is preferable that the~~The top plate 82 ~~is~~ may be made of a lower-melting glass material such as low-melting glass or glass used for molding.

The paragraph beginning on page 45, line 9, has been amended as follows:

In the embodiments above, the combinations of materials of the top plate and the base substrate are not limited to any particular ones. ~~It is preferable, however, that the~~The linear expansion coefficient of the top plate and the linear expansion coefficient of the base substrate should be ~~are~~ as close as possible, in consideration of temperature changes caused by, for instance, heating. More specifically, it is desirable that the difference between the foregoing linear expansion coefficients is not more than 2. Furthermore, although it has been stated that the combining layer, top plate, and base substrate are made of materials such as Au and SiO_2, any other materials may be included on condition that the above-described materials are included as major components.

The paragraph beginning on page 48, line 2, has been amended as follows:

A thin film can be easily formed with metal or silicon dioxide and the film can be appropriately molten by heating. Thus these materials are suitable for forming the combining layer. On this account, for instance, a combining layer made of such a material is formed on a hard-to-melt substrate or top plate and the substrate and the top plate are superposed to each other and put in a high-temperature atmosphere, so that the substrate and the top plate are easily combined with each other, as only the combining layer is molten. Note ~~that it is preferable~~ that silicon dioxide ~~is~~ may be an application-type one.

The paragraph beginning on page 48, line 17, has been amended as follows:

Adopting the substrate or the top plate which is made mainly of silicon, glass, or aluminum oxide, it is possible to form a pattern formation apparatus with minute shape change due to environmental changes but having sufficient rigidity. The combining layer is formed on the substrate or the top plate. Being alternative to this, the following may be carried out: the surface of the substrate or the top plate is molten by the projection of laser light or ion beam, and the molten surface is used as a combining layer. In this case, it is unnecessary to provide an independent process of forming a combining layer, thereby the

manufacturing being simplified. Furthermore, since a combining layer is not formed on the substrate or the top plate, the accuracy of the nozzle formation further improves. Note that, in this case a glass used as a material ~~preferably has~~may have a lower melting point.

The paragraph beginning on page 51, line 17, has been amended as follows:

When the combining layer is made of metal, gold is particularly easily molten and thus suitable for the material of the combining layer. For this reason, ~~it is preferable that~~ the combining layer ~~is~~ may be made mainly of gold. Aluminum and tin are also molten relatively easily so that good combining is ensured when one combining layer is made mainly of gold while the other combining layer is made mainly of aluminum or tin.